US ARMY ELECTRONICS RESEARCH & DEVELOPMENT ACTIVITY

METEOROLOGICAL DATA REPORT

AEROBEE NASA 4.82 GG
(11 August 1964)

BY

MARJORIE McLARDIE HOIDALE

ERDA-182

AUGUST 1964

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WHITE SANDS MISSILE RANGE
NEW MEXICO

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DA Task 1-V-6-50212-D-127-02

METEOROLOGICAL SUPPORT DIVISION
ENVIRONMENTAL SCIENCES DIRECTORATE
U. S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT ACTIVITY
WHITE SANDS MISSILE RANGE
NEW MEXICO

ABSTRACT

33693

Meteorological data gathered for the launching of Aerobee NASA 4.82 GG are presented for the National Aeronautics and Space Administration and for ballistic studies. The data appear, along with calculated ballistic data, in Appendixes A, B, C and D.

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INTRODUCTION

Aerobee NASA 4.82 GG was launched by Naval Ordnance Missile Test Facility personnel, White Sands Missile Range, New Mexico, at 0330 hours MST, 11 August 1964.

Meteorological data used in conjunction with theoretical calculations to predict rocket impact were collected by the Meteorological Support Division, U. S. Army Electronics Research and Development Activity, White Sands Missile Range, New Mexico.

DISCUSSION

Wind data for the first 4,000 feet above the surface were obtained from a Double-Theodolite Wind Velocity Computer System [1]. Balloons released at the launch site were observed and tracked from a 2,000-foot baseline. Continuous angular data were transmitted from two electrically instrumented theodolites to a computer where the data were reduced to obtain a velocity-vs-height relationship. The computer output drives two recorders which trace north-south and east-west components on a specially designed wind velocity computer ballistic chart. It is possible to read directly from the chart both the mean wind component values and the mean ballistic wind components in the various ballistic layers.

Temperature, pressure and humidity data, along with upper wind data from 4,000 to approximately 75,000 feet above the surface, were obtained from standard rawinsonde operations.

Mean wind component values in each ballistic zone were determined from vertical cross sections by the equal-area method.

Data appearing in Appendix D are based on the E. L. Walter [2] theory. The "Predicted Impact" includes, where applicable, an adjustment of impact based on the experience of the impact predictor and the forecast of firing time wind conditions.

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[1]. "Double-Theodolite Wind Velocity Computer," UNCLASSIFIED, U. S. Army Signal Research and Development Laboratory, Fort Monmouth, New Jersey, July 1959.

[2]. Walter, E. L., "Six-Variable Ballistic Model for a Rocket," Missile Meteorology Division, U. S. Army Signal Missile Support Agency, White Sands Missile Range, New Mexico, June 1962.

APPENDIX A

CALCULATED ROCKET PERFORMANCE VALUES

AND

TABLE OF BALLISTIC FACTORS

AEROBEE NASA 4.82 GG

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APPENDIX A

TABLE A-I

CALCULATED ROCKET PERFORMANCE VALUES

AEROBEE NASA 4.82 GG

PAYLOAD 301.5 POUNDS*

UNIT WIND EFFECT	Surface to 2,000 Feet	2.44 Miles/MPH (3)
	2,000 to 100,000 Feet	4.39 Miles/MPH
TOWER TILT EFFECT		17.95 Miles/Degree
BURNOUT:		
	Velocity	5,690 Feet/Second
	Altitude	124,555 Feet MSL
	Time	51.8 Seconds
PEAK:		
	Altitude	115.3 Miles MSL
	Time	228 Seconds
TOTAL TIME OF FLIGHT		427 Seconds
CORIOLIS EFFECT (West)		5.15 Miles

*Includes Nosecone Weight

(3) An empirical correction has been made to the unit wind effect from 143 to 2,000 feet. This correction was determined from statistical studies.

Dunaway, G. L., "An Empirical Technique for Improving Aerobee-Hi Impact Predictions," Meteorological Support Division, U. S. Army Electronics Research and Development Activity, White Sands Missile Range, New Mexico, May 1964.

APPENDIX A

TABLE A-II

TABLE OF BALLISTIC FACTORS

AEROBEE NASA 4.82 GG

HEIGHT INTERVAL FEET	BALLISTIC FACTOR	HEIGHT INTERVAL FEET	BALLISTIC FACTOR
143 - 200	.100	5,000 - 10,000	.078
200 - 300	.130	10,000 - 15,000	.042
300 - 400	.102	15,000 - 20,000	.030
400 - 600	.150	20,000 - 25,000	.020
600 - 800	.078	25,000 - 30,000	.017
800 - 1,000	.012	30,000 - 35,000	.010
1,000 - 1,200	.018	35,000 - 40,000	.010
1,200 - 1,400	.013	40,000 - 45,000	.006
1,400 - 1,600	.012	45,000 - 50,000	.009
1,600 - 1,800	.011	50,000 - 60,000	.010
1,800 - 2,000	.010	60,000 - 70,000	.007
2,000 - 3,000	.052	70,000 - 80,000	.006
3,000 - 4,000	.040	80,000 - 90,000	.003
4,000 - 5,000	.022	90,000 - 100,000	.002

APPENDIX B

ANEMOMETER RECORDINGS OF WIND SPEED AND DIRECTION

AND

PILOT-BALLOON-MEASURED WIND DATA FORM 143 TO 4,000 FEET

AEROBEE NASA 4.82 GG

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B-I. Anemometer Recordings of Wind Speed and Direction - 8

B-II. Pilot-Balloon-Measured Wind Data (143 to 4,000 Feet) - 9

APPENDIX B

TABLE B-I

ANEMOMETER RECORDINGS OF WIND SPEED AND DIRECTION

AEROBEE NASA 4.82 GG

TIME (MINUTES)	WIND SPEED (KNOTS)	DIRECTION (DEGREES)
T - 15	5.0	130
T - 10	4.5	140
T - 5	3.5	136
T - TIME	4.0	145
T + 5	5.0	142
T + 10	5.0	128
T + 15	5.5	134

NOTE: Wind speeds and directions are 5-minute averages centered at indicated times.

APPENDIX B

TABLE B-II

PILOT-BALLOON-MEASURED WIND DATA

AEROBEE NASA 4.82 GG

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

DOUBLE-THEODOLITE METHOD

RELEASE NR	1		2		3		4	
RELEASE TIME (MST)	2353		0009		0029		0058	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
143 - 250	9.0S	2.0W	0.5S	2.5W	1.0S	0.5W	0.5S	1.5E
250 - 400	13.0	7.0	1.5	3.0	1.0N	3.0	1.0N	2.0W
400 - 600	14.5	8.5	3.0	5.5	1.5	3.5	2.5	3.5
600 - 800	14.0	9.0	6.0	6.5	1.5	3.0	4.0	4.5
800 - 1,200	13.0	9.5	9.5	7.5	1.0S	4.0	2.5	4.0
1,200 - 1,600	8.0	8.5	9.0	9.0	2.0	5.5	1.5S	2.0
1,600 - 2,000	16.0	9.0	6.5	7.5	3.0	7.0	1.5	1.5
2,000 - 2,500	19.5	9.5	5.5	6.0	6.0	6.5	3.0	3.0
2,500 - 3,000	19.0	9.0	6.0	3.0	6.5	4.5	1.5	3.5
3,000 - 3,500	22.0	9.0	3.5	0.5	6.0	4.5	1.0	1.0
3,500 - 4,000	24.5	10.0	2.0	4.5	1.0	2.5	0.5	0

APPENDIX B

TABLE B-II (Cont)

PILOT-BALLOON-MEASURED WIND DATA

AEROBEE NASA 4.82 GG

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

DOUBLE-THEODOLITE METHOD

RELEASE NR	5		6		7		8	
RELEASE TIME (MST)	0130		0159		0230		0245	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
143 - 250	0	0	1.5S	0	2.0S	2.0W	1.0N	0
250 - 400	2.5N	5.0W	1.0	2.5W	1.0	4.0	3.5	1.0W
400 - 600	3.0	8.0	0	4.0	0.5	5.5	5.0	2.0
600 - 800	3.5	9.0	0.5N	5.5	0.5N	7.5	6.0	4.0
800 - 1,200	3.5	6.0	1.0	5.0	3.5	7.5	4.5	5.0
1,200 - 1,600	3.0	2.0	1.0	5.0	4.0	8.0	2.5	7.5
1,600 - 2,000	2.0S	0.5	1.5S	3.0	0.5	5.0	1.5	6.5
2,000 - 2,500	2.5	1.0	2.5	2.5	0.5	4.0	1.5	3.5
2,500 - 3,000	0.5	3.0	1.5	1.0	1.0	3.5	1.5	1.5
3,000 - 3,500	2.5N	7.0	1.5	0.5	1.0S	1.5	0.5	1.0E
3,500 - 4,000	4.5	4.5	1.0	2.0	1.5	1.5E	1.0S	2.0

APPENDIX B

TABLE B-II (Cont)

PILOT-BALLOON-MEASURED WIND DATA

AEROBEE NASA 4.82 GG

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

DOUBLE-THEODOLITE METHOD

RELEASE NR	9		10		11		12	
RELEASE TIME (MST)	0300		0310		0320		0332	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
143 - 250	0.5S	1.0E	2.5N	1.5E	0	1.0E	1.0S	1.0E
250 - 400	1.5N	1.0	4.5	0.5W	4.0N	0	1.5N	0.5
400 - 600	4.5	1.0W	4.5	0.5	6.0	1.0W	4.5	0.5W
600 - 800	5.5	2.0	5.0	1.0	8.0	1.5	5.0	1.0
800 - 1,200	6.0	3.5	7.0	3.5	8.5	2.5	6.0	2.0
1,200 - 1,600	4.0	4.5	3.5	4.5	5.5	4.0	6.0	3.5
1,600 - 2,000	2.0	4.5	4.0	5.0	3.0	4.5	2.5	4.0
2,000 - 2,500							1.0S	3.0
2,500 - 3,000							0	1.5
3,000 - 3,500							0	1.5
3,500 - 4,000							1.0S	1.5

APPENDIX C

TABLES OF UPPER AIR DATA

AEROBEE NASA 4.82 GG

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APPENDIX C

TABLE C-I

UPPER AIR DATA

AEROBEE NASA 4.82 GG

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN KNOTS

RELEASE NR	1	
RELEASE TIME (MST)	0215	
LAYERS IN FEET	N-S	E-W
4,000 - 5,000	2.0N	2.5W
5,000 - 10,000	3.0	1.5E
10,000 - 15,000	4.5S	12.0
15,000 - 20,000	7.0N	4.0

APPENDIX C

TABLE C-II

UPPER AIR DATA

AEROBEE NASA 4.82 GG

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN KNOTS

RELEASE NR	1		2		3	
RELEASE TIME (MST)	2130		0001		0330	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W
4,000 - 5,000	0	4.0W	2.0S	2.5W	4.5S	1.0E
5,000 - 10,000	9.0S	0	3.5	2.0E	5.5N	7.5
10,000 - 15,000	3.0N	8.5E	2.5	15.0	3.0	11.5
15,000 - 20,000	3.5S	9.5	0	8.0	1.0N	5.0
20,000 - 25,000	1.0	5.0	2.5N	4.0	1.0S	5.0
25,000 - 30,000	4.0	11.5	5.0S	6.0	3.5	8.5
30,000 - 35,000	6.5N	11.0	0	15.0	3.5N	10.5
35,000 - 40,000	9.5	11.5	11.0N	13.0	11.0	10.5
40,000 - 45,000	6.5	11.0	7.0	12.0	8.5	9.5
45,000 - 50,000	2.5S	13.5	0	8.0	1.5	11.5
50,000 - 60,000	2.0	13.0	3.5S	9.5	0	7.5
60,000 - 70,000	0	14.0	4.0N	22.5	1.0S	17.0
70,000 - 80,000	0	24.0	4.5S	24.5	BALLOON	
80,000 - 90,000	6.0N	32.5	0	25.0	BURST	
90,000 - 100,000	0	39.0	0	39.0		

APPENDIX C

TABLE C-III

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 10 AUG 1964, 2130 HRS MST
ASCENSION NO.528.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3989.	876.4	29.8	15.2	41.	1000.5	680.	0.	0.	1.000294
4000.	876.1	29.9	15.0	40.	999.9	680.	1.	0.	1.000293
4500.	861.3	32.1	6.2	20.	979.1	682.	48.	1.	1.000257
5000.	846.8	30.8	6.8	22.	966.6	680.	96.	2.	1.000256
5500.	832.5	29.4	7.2	25.	954.2	679.	143.	3.	1.000255
6000.	818.3	28.1	7.5	27.	941.9	677.	190.	4.	1.000253
6500.	804.3	26.8	7.6	30.	929.9	676.	220.	5.	1.000251
7000.	790.6	25.4	7.7	32.	918.0	674.	230.	4.	1.000249
7500.	776.9	24.1	7.6	35.	906.2	673.	244.	4.	1.000247
8000.	763.5	22.7	7.4	37.	894.6	671.	260.	3.	1.000244
8500.	750.2	21.3	7.2	40.	883.1	670.	268.	4.	1.000241
9000.	737.1	20.0	6.8	42.	871.7	668.	272.	5.	1.000238
9500.	724.2	18.6	6.5	45.	860.5	667.	283.	5.	1.000235
10000.	711.4	17.2	6.0	47.	849.5	665.	295.	5.	1.000231
10500.	698.9	15.8	5.5	50.	838.5	664.	307.	4.	1.000228
11000.	686.4	14.4	4.9	53.	827.7	662.	321.	4.	1.000224
11500.	674.1	13.0	5.0	58.	816.8	660.	351.	4.	1.000222
12000.	662.0	11.6	5.6	67.	805.9	659.	19.	5.	1.000222
12500.	650.1	10.1	6.0	75.	795.2	657.	32.	7.	1.000221
13000.	638.3	8.7	6.2	84.	784.7	656.	42.	8.	1.000220
13500.	626.7	7.2	6.2	93.	774.3	654.	42.	10.	1.000218
14000.	615.2	5.8	5.8	99.	764.0	652.	45.	11.	1.000215
14500.	603.9	4.7	3.9	95.	753.6	651.	51.	12.	1.000208
15000.	592.7	3.5	2.0	90.	743.2	649.	52.	12.	1.000201
15500.	581.7	2.9	-5.9	52.	732.3	648.	52.	12.	1.000183
16000.	570.9	1.5	-4.4	65.	722.1	646.	54.	12.	1.000183
16500.	560.2	0.6	-6.4	60.	711.2	645.	58.	12.	1.000178
17000.	549.7	0.2	-10.7	44.	699.3	644.	68.	13.	1.000170
17500.	539.3	-0.3	-14.7	33.	687.8	644.	78.	15.	1.000163
18000.	529.2	-1.3	-15.6	33.	677.2	642.	88.	16.	1.000160
18500.	519.2	-2.2	-16.5	33.	666.8	641.	97.	15.	1.000157
19000.	509.3	-3.2	-17.4	33.	656.6	640.	106.	14.	1.000154
19500.	499.6	-4.2	-18.3	32.	646.4	639.	113.	13.	1.000152

TABLE C-III (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 10 AUG 1964, 2130 HRS MST
ASCENSION NO.528.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
20000.	490.0	-5.1	-19.2	32.	636.4	638.	118.	13.	1.000149
20500.	480.6	-6.1	-20.2	32.	626.5	637.	121.	13.	1.000146
21000.	471.4	-7.1	-21.1	32.	616.8	635.	122.	12.	1.000144
21500.	462.3	-8.1	-22.0	32.	607.1	634.	120.	11.	1.000141
22000.	453.3	-9.1	-22.9	32.	597.6	633.	114.	10.	1.000138
22500.	444.4	-10.1	-23.8	32.	588.2	632.	108.	9.	1.000136
23000.	435.8	-11.1	-24.8	32.	578.9	631.	103.	8.	1.000133
23500.	427.2	-12.1	-25.7	31.	569.7	629.	97.	7.	1.000131
24000.	418.8	-13.1	-26.6	31.	560.7	628.	91.	6.	1.000129
24500.	410.5	-14.1	-27.6	31.	551.8	627.	87.	5.	1.000126
25000.	402.3	-15.1	-28.5	31.	543.0	626.	85.	4.	1.000124
25500.	394.3	-16.2	-29.5	31.	534.3	624.	97.	4.	1.000122
26000.	386.4	-17.3	-30.4	31.	525.9	623.	104.	4.	1.000120
26500.	378.6	-18.4	-31.3	31.	517.6	622.	108.	5.	1.000118
27000.	371.0	-19.5	-32.3	32.	509.4	620.	109.	6.	1.000116
27500.	363.4	-20.6	-33.2	32.	501.3	619.	111.	6.	1.000114
28000.	356.0	-21.7	-34.2	32.	493.2	618.	112.	7.	1.000112
28500.	348.8	-22.9	-35.2	32.	485.3	616.	113.	8.	1.000110
29000.	341.6	-24.0	-36.1	32.	477.5	615.	113.	9.	1.000108
29500.	334.5	-25.1	-37.1	32.	469.8	613.	113.	10.	1.000106
30000.	327.6	-26.3	-38.1	32.	462.2	612.	114.	12.	1.000104
30500.	320.8	-27.4	-39.1	32.	454.7	610.	114.	13.	1.000103
31000.	314.1	-28.6	-40.1	33.	447.3	609.	113.	13.	1.000101
31500.	307.5	-29.7	-41.1	33.	440.0	608.	111.	13.	1.000099
32000.	301.0	-30.9	-42.1	33.	432.8	606.	107.	12.	1.000097
32500.	294.6	-32.1	-43.1	33.	425.7	605.	100.	12.	1.000096
33000.	288.3	-33.2	-44.1	33.	418.6	603.	92.	12.	1.000094
33500.	282.1	-34.4	-45.1	33.	411.7	602.	86.	13.	1.000092
34000.	276.0	-35.6	-46.2	34.	404.8	600.	81.	14.	1.000091
34500.	270.1	-36.8	-47.2	34.	398.1	599.	78.	14.	1.000089
35000.	264.2	-38.0	-48.2	34.	391.4	597.	76.	14.	1.000088
35500.	258.4	-39.2	-49.3	34.	384.8	596.	74.	13.	1.000086
36000.	252.7	-40.5			378.3	594.	73.	13.	1.000085

TABLE C-III(Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 10 AUG 1964, 2130 HRS MST
ASCENSION NO.528.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
36500.	247.1	-41.7			372.0	592.	71.	12.	1.000083
37000.	241.6	-43.0			365.8	591.	67.	11.	1.000082
37500.	236.2	-44.3			359.6	589.	62.	11.	1.000080
38000.	230.9	-45.6			353.5	587.	57.	11.	1.000079
38500.	225.7	-46.9			347.5	586.	55.	11.	1.000077
39000.	220.6	-48.2			341.6	584.	53.	12.	1.000076
39500.	215.5	-49.5			335.8	582.	53.	13.	1.000075
40000.	210.6	-50.8			330.0	581.	52.	15.	1.000074
40500.	205.7	-52.1			324.3	579.	50.	16.	1.000072
41000.	200.9	-53.2			318.4	577.	48.	17.	1.000071
41500.	196.3	-54.4			312.6	576.	46.	17.	1.000070
42000.	191.6	-55.6			306.9	574.	43.	17.	1.000068
42500.	187.1	-56.7			301.2	573.	41.	17.	1.000067
43000.	182.7	-57.9			295.7	571.	39.	17.	1.000066
43500.	178.3	-59.1			290.2	570.	39.	16.	1.000065
44000.	174.1	-60.2			284.8	568.	41.	15.	1.000063
44500.	169.9	-61.4			279.5	567.	74.	16.	1.000062
45000.	165.7	-62.6			274.3	565.	118.	17.	1.000061
45500.	161.7	-63.8			269.2	563.	105.	16.	1.000060
46000.	157.7	-65.0			264.1	562.	69.	13.	1.000059
46500.	153.8	-66.2			259.0	560.	65.	12.	1.000058
47000.	150.0	-67.2			253.8	559.	70.	12.	1.000057
47500.	146.3	-68.1			248.6	558.	52.	16.	1.000055
48000.	142.6	-69.1			243.6	556.	29.	21.	1.000054
48500.	139.1	-70.1			238.6	555.	34.	21.	1.000053
49000.	135.6	-71.1			233.7	554.	65.	16.	1.000052
49500.	132.1	-72.0			228.9	552.	91.	12.	1.000051
50000.	128.8	-73.0			224.2	551.	95.	13.	1.000050
50500.	125.5	-74.0			219.5	549.	98.	15.	1.000049
51000.	122.2	-75.0			214.9	548.	101.	16.	1.000048
51500.	119.1	-75.0			209.4	548.	104.	17.	1.000047
52000.	116.0	-74.9			203.9	548.	108.	16.	1.000045
52500.	113.0	-74.8			198.5	548.	112.	15.	1.000044

TABLE C-III (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 10 AUG 1964, 2130 HRS MST
ASCENSION NO.528.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
53000.	110.1	-74.7			193.3	549.	116.	14.	1.000043
53500.	107.3	-74.6			188.2	549.	118.	12.	1.000042
54000.	104.5	-74.5			183.3	549.	119.	11.	1.000041
54500.	101.8	-74.4			178.5	549.	115.	10.	1.000040
55000.	99.2	-74.2			173.7	549.	105.	10.	1.000039
55500.	96.7	-73.8			168.9	550.	97.	10.	1.000038
56000.	94.2	-73.4			164.3	550.	92.	11.	1.000037
56500.	91.8	-72.9			159.7	551.	88.	12.	1.000036
57000.	89.4	-72.5			155.3	552.	88.	14.	1.000035
57500.	87.2	-72.1			151.1	552.	87.	17.	1.000034
58000.	85.0	-71.2			146.6	553.	90.	16.	1.000033
58500.	82.8	-70.3			142.2	555.	94.	15.	1.000032
59000.	80.7	-69.4			138.0	556.	97.	15.	1.000031
59500.	78.7	-68.4			134.0	557.	100.	15.	1.000030
60000.	76.8	-67.5			130.1	558.	103.	15.	1.000029
60500.	74.9	-66.6			126.3	560.	110.	14.	1.000028
61000.	73.0	-65.7			122.6	561.	118.	13.	1.000027
61500.	71.2	-64.8			119.1	562.	119.	12.	1.000027
62000.	69.5	-63.9			115.7	563.	120.	11.	1.000026
62500.	67.8	-63.0			112.4	565.	116.	10.	1.000025
63000.	66.1	-62.1			109.2	566.	106.	8.	1.000024
63500.	64.5	-61.2			106.1	567.	94.	7.	1.000024
64000.	63.0	-60.3			103.1	568.	73.	7.	1.000023
64500.	61.5	-59.8			100.4	569.	53.	6.	1.000022
65000.	60.0	-60.0			98.1	568.	46.	8.	1.000022
65500.	58.6	-60.3			95.8	568.	39.	9.	1.000021
66000.	57.2	-60.5			93.7	568.	48.	10.	1.000021
66500.	55.8	-60.8			91.5	567.	58.	11.	1.000020
67000.	54.4	-60.7			89.3	568.	67.	13.	1.000020
67500.	53.1	-60.1			86.9	568.	77.	15.	1.000019
68000.	51.9	-59.6			84.6	569.	83.	17.	1.000019
68500.	50.6	-59.0			82.4	570.	88.	19.	1.000018
69000.	49.4	-58.4			80.2	571.	92.	19.	1.000018

TABLE C-III (cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 10 AUG 1964, 2130 HRS MST
ASCENSION NO.528.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
69500.	48.2	-57.9			78.1	571.	95.	19.	1.000017
70000.	47.1	-57.3			76.0	572.	96.	19.	1.000017
70500.	46.0	-56.8			74.1	573.	95.	20.	1.000016
71000.	44.9	-56.2			72.1	573.	94.	20.	1.000016
71500.	43.9	-55.7			70.3	574.	92.	20.	1.000016
72000.	42.8	-55.1			68.4	575.	90.	20.	1.000015
72500.	41.8	-54.6			66.7	576.	87.	22.	1.000015
73000.	40.8	-54.1			65.0	576.	84.	23.	1.000014
73500.	39.9	-53.5			63.3	577.	86.	23.	1.000014
74000.	39.0	-53.0			61.7	578.	89.	22.	1.000014
74500.	38.1	-52.4			60.1	578.	92.	22.	1.000013
75000.	37.2	-52.4			58.7	579.	95.	23.	1.000013
75500.	36.3	-52.4			57.3	579.	98.	23.	1.000013
76000.	35.5	-52.3			56.0	579.	101.	24.	1.000012
76500.	34.7	-52.3			54.7	579.	104.	24.	1.000012
77000.	33.9	-52.3			53.4	579.	105.	24.	1.000012
77500.	33.1	-52.3			52.2	579.	105.	23.	1.000012
78000.	32.3	-52.2			51.0	579.	105.	22.	1.000011
78500.	31.6	-52.2			49.8	579.	105.	21.	1.000011
79000.	30.8	-52.2			48.6	579.	104.	21.	1.000011
79500.	30.1	-52.2			47.5	579.	102.	21.	1.000011
80000.	29.4	-52.2			46.4	579.	100.	21.	1.000010
80500.	28.8	-52.1			45.3	579.	96.	22.	1.000010
81000.	28.1	-52.1			44.3	579.	91.	23.	1.000010
81500.	27.4	-52.1			43.2	579.	89.	24.	1.000010
82000.	26.8	-52.1			42.2	579.	87.	25.	1.000009
82500.	26.2	-52.0			41.3	579.	85.	26.	1.000009
83000.	25.6	-52.0			40.3	579.	85.	26.	1.000009
83500.	25.0	-52.0			39.4	579.	85.	27.	1.000009
84000.	24.4	-51.8			38.4	579.	84.	27.	1.000009
84500.	23.9	-51.5			37.5	580.	84.	27.	1.000008
85000.	23.3	-51.3			36.6	580.	84.	27.	1.000008
85500.	22.8	-51.0			35.7	580.	84.	29.	1.000008

TABLE C-III (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 10 AUG 1964, 2130 HRS MST
ASCENSION NO.528.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
86000.	22.2	-50.8			34.9	581.	83.	30.	1.000008
86500.	21.7	-50.6			34.0	581.	81.	31.	1.000008
87000.	21.2	-50.3			33.2	581.	79.	33.	1.000007
87500.	20.8	-50.1			32.4	582.	78.	34.	1.000007
88000.	20.3	-49.9			31.6	582.	77.	35.	1.000007
88500.	19.8	-49.6			30.9	582.	76.	37.	1.000007
89000.	19.4	-49.4			30.1	582.	77.	38.	1.000007
89500.	18.9	-49.1			29.4	583.	78.	39.	1.000007
90000.	18.5	-48.9			28.7	583.	79.	39.	1.000006
90500.	18.1	-48.7			28.1	583.	80.	39.	1.000006
91000.	17.7	-48.4			27.4	584.	82.	39.	1.000006
91500.	17.3	-48.2			26.7	584.	84.	39.	1.000006
92000.	16.9	-48.0			26.1	584.	85.	39.	1.000006
92500.	16.5	-47.7			25.5	585.	86.	39.	1.000006
93000.	16.1	-47.5			24.9	585.	86.	39.	1.000006
93500.	15.8	-47.3			24.3	585.	86.	39.	1.000005
94000.	15.4	-47.0			23.7	586.	86.	39.	1.000005
94500.	15.1	-46.8			23.2	586.	86.	40.	1.000005
95000.	14.7	-46.6			22.6	586.	86.	40.	1.000005
95500.	14.4	-46.3			22.1	586.	87.	41.	1.000005
96000.	14.1	-46.1			21.6	587.	89.	42.	1.000005
96500.	13.7	-45.9			21.1	587.	91.	42.	1.000005
97000.	13.4	-45.6			20.6	587.	92.	42.	1.000005
97500.	13.1	-45.4			20.1	588.	92.	41.	1.000004
98000.	12.8	-45.2			19.6	588.	93.	40.	1.000004
98500.	12.6	-44.9			19.2	588.	92.	38.	1.000004
99000.	12.3	-44.7			18.7	589.	92.	35.	1.000004
99500.	12.0	-44.5			18.3	589.	89.	34.	1.000004
100000.	11.7	-44.2			17.9	589.	85.	34.	1.000004
100500.	11.5	-44.0			17.4	589.	82.	33.	1.000004
101000.	11.2	-43.8			17.0	590.	80.	35.	1.000004
101500.	11.0	-43.5			16.6	590.	79.	36.	1.000004
102000.	10.7	-43.3			16.3	590.	78.	37.	1.000004

TABLE C-III (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 10 AUG 1964, 2130 HRS MST
ASCENSION NO.528.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
102500.	10.5	-43.1			15.9	591.	78.	38.	1.000004
103000.	10.3	-42.9			15.5	591.	77.	39.	1.000003
103500.	10.0	-42.6			15.2	591.	79.	41.	1.000003
104000.	9.8	-42.0			14.8	592.	81.	43.	1.000003
104500.	9.6	-41.4			14.4	593.	82.	44.	1.000003
105000.	9.4	-40.8			14.1	594.	83.	46.	1.000003
105500.	9.2	-40.2			13.7	594.	84.	47.	1.000003
106000.	9.0	-39.5			13.4	595.	85.	49.	1.000003
106500.	8.8	-38.9			13.0	596.	87.	53.	1.000003
107000.	8.6	-38.3			12.7	597.	89.	56.	1.000003
107500.	8.4	-37.7			12.4	597.	91.	58.	1.000003
108000.	8.2	-37.1			12.1	598.	92.	60.	1.000003
108500.	8.0	-36.5			11.8	599.	93.	62.	1.000003
109000.	7.9	-35.9			11.5	600.	93.	63.	1.000003
109500.	7.7	-35.3			11.3	601.	93.	63.	1.000003
110000.	7.5	-34.7			11.0	601.	93.	64.	1.000002
110500.	7.4	-34.0			10.7	602.	93.	64.	1.000002
111000.	7.2	-33.4			10.5	603.	93.	64.	1.000002
111500.	7.1	-32.8			10.2	604.	93.	63.	1.000002
112000.	6.9	-32.7			10.0	604.	93.	61.	1.000002
112500.	6.8	-32.8			9.8	604.	93.	59.	1.000002
113000.	6.6	-33.0			9.6	603.			1.000002
113500.	6.5	-33.1			9.4	603.			1.000002
114000.	6.3	-33.2			9.2	603.			1.000002
114500.	6.2	-33.4			9.0	603.			1.000002
115000.	6.1	-33.5			8.8	603.			1.000002

TABLE C-IV

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 11 AUG 1964, 0001 HRS MST
ASCENSION NO.529.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3989.	876.6	26.5	13.0	43.	1012.7	676.	60.	2.	1.000289
4000.	876.3	26.6	13.1	43.	1011.9	676.	61.	2.	1.000289
4500.	861.4	30.3	17.4	46.	980.6	681.	90.	3.	1.000300
5000.	846.9	29.9	16.8	45.	965.4	681.	120.	3.	1.000293
5500.	832.6	29.5	16.1	44.	950.7	680.	150.	3.	1.000287
6000.	818.5	28.1	15.3	45.	939.2	679.	180.	4.	1.000281
6500.	804.6	26.7	14.5	47.	927.8	677.	210.	4.	1.000276
7000.	790.8	25.3	13.6	48.	916.5	675.	218.	4.	1.000270
7500.	777.3	23.9	12.7	49.	905.3	673.	225.	4.	1.000265
8000.	763.8	22.5	11.8	51.	894.1	672.	230.	3.	1.000259
8500.	750.6	21.0	10.9	52.	883.1	670.	234.	3.	1.000254
9000.	737.5	19.6	9.9	53.	872.2	668.	230.	2.	1.000248
9500.	724.6	18.2	9.0	55.	861.4	667.	216.	2.	1.000243
10000.	711.8	16.7	8.0	56.	850.7	665.	177.	2.	1.000238
10500.	699.2	15.3	7.0	57.	840.0	663.	145.	2.	1.000233
11000.	686.7	13.8	5.9	59.	829.5	661.	125.	2.	1.000228
11500.	674.4	12.4	5.8	64.	818.6	660.	107.	3.	1.000225
12000.	662.3	11.1	5.8	70.	807.6	658.	91.	4.	1.000223
12500.	650.3	9.7	5.6	76.	796.9	657.	80.	5.	1.000221
13000.	638.5	8.3	5.4	82.	786.3	655.	71.	7.	1.000218
13500.	626.9	6.9	5.1	88.	775.8	653.	70.	9.	1.000215
14000.	615.4	5.5	4.6	94.	765.4	652.	70.	11.	1.000212
14500.	604.0	4.1	4.1	100.	755.2	650.	73.	13.	1.000209
15000.	592.9	3.5	-0.2	77.	743.8	649.	78.	15.	1.000196
15500.	581.9	2.9	-5.5	54.	732.5	648.	84.	16.	1.000183
16000.	571.0	2.0	-6.4	54.	721.1	647.	92.	15.	1.000180
16500.	560.4	1.2	-7.2	53.	709.9	646.	100.	13.	1.000176
17000.	549.9	0.4	-8.1	53.	698.8	645.	106.	15.	1.000173
17500.	539.5	-0.5	-9.0	53.	687.9	644.	112.	16.	1.000169
18000.	529.4	-1.3	-9.9	52.	677.1	643.	115.	15.	1.000166
18500.	519.3	-2.2	-10.7	52.	666.5	642.	116.	15.	1.000162
19000.	509.5	-3.0	-11.6	52.	656.0	641.	114.	17.	1.000159
19500.	499.8	-3.9	-12.5	51.	645.6	639.	113.	15.	1.000156

TABLE C-IV (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 11 AUG 1964, 0001 HRS MST
ASCENSION NO.529.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
20000.	490.3	-4.8	-13.4	51.	635.4	638.	114.	12.	1.000153
20500.	480.9	-5.6	-14.2	51.	625.3	637.	111.	10.	1.000150
21000.	471.6	-6.5	-15.1	51.	615.3	636.	105.	8.	1.000147
21500.	462.5	-7.4	-16.0	50.	605.4	635.	90.	6.	1.000144
22000.	453.5	-8.3	-17.0	50.	595.9	634.	72.	5.	1.000142
22500.	444.7	-9.4	-18.1	50.	586.9	633.	50.	4.	1.000139
23000.	436.1	-10.6	-19.1	50.	577.9	631.	30.	3.	1.000136
23500.	427.5	-11.7	-20.2	49.	569.1	630.	12.	4.	1.000134
24000.	419.1	-12.8	-21.3	49.	560.3	629.	359.	4.	1.000131
24500.	410.8	-13.9	-22.4	49.	551.7	627.	351.	4.	1.000129
25000.	402.7	-15.1	-23.5	49.	543.2	626.	353.	5.	1.000126
25500.	394.7	-16.2	-24.6	49.	534.8	624.	358.	5.	1.000124
26000.	386.8	-17.4	-25.7	49.	526.4	623.	13.	3.	1.000122
26500.	379.0	-18.5	-26.8	48.	518.2	622.	31.	2.	1.000119
27000.	371.3	-19.7	-28.0	48.	510.1	620.	58.	3.	1.000117
27500.	363.8	-20.8	-29.1	48.	502.1	619.	85.	3.	1.000115
28000.	356.4	-22.0	-30.2	48.	494.2	617.	111.	4.	1.000113
28500.	349.1	-23.2	-31.3	48.	486.3	616.	126.	5.	1.000111
29000.	341.9	-24.4	-32.5	47.	478.6	614.	132.	6.	1.000109
29500.	334.8	-25.6	-33.6	47.	471.0	613.	136.	7.	1.000107
30000.	327.9	-26.7	-34.8	47.	463.4	611.	141.	9.	1.000105
30500.	321.0	-27.9	-35.9	47.	456.0	610.	141.	9.	1.000103
31000.	314.3	-29.1	-37.1	47.	448.7	608.	138.	10.	1.000102
31500.	307.7	-30.3	-38.3	47.	441.4	607.	134.	10.	1.000100
32000.	301.2	-31.6	-39.4	46.	434.2	605.	130.	9.	1.000098
32500.	294.8	-32.8	-40.6	46.	427.2	604.	124.	10.	1.000096
33000.	288.5	-34.0	-41.8	46.	420.2	602.	119.	10.	1.000095
33500.	282.2	-35.2	-42.7	47.	413.0	601.	114.	11.	1.000093
34000.	276.1	-36.3	-43.5	48.	406.1	599.	109.	12.	1.000091
34500.	270.1	-37.4	-44.4	49.	399.2	598.	108.	13.	1.000090
35000.	264.2	-38.6	-45.3	50.	392.4	596.	107.	13.	1.000088
35500.	258.4	-39.7	-46.2	51.	385.7	595.	103.	12.	1.000087
36000.	252.7	-40.9	-47.1	52.	379.1	593.	96.	12.	1.000085

TABLE C-IV (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 11 AUG 1964, 0001 HRS MST
ASCENSION NO.529.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
36500.	247.1	-42.1	-48.0	53.	372.6	592.	83.	12.	1.000084
37000.	241.6	-43.2	-48.9	54.	366.1	590.	74.	12.	1.000082
37500.	236.2	-44.4	-49.9	56.	359.8	589.	67.	14.	1.000081
38000.	230.9	-45.6			353.5	587.	63.	15.	1.000079
38500.	225.7	-46.8			347.4	586.	60.	16.	1.000078
39000.	220.6	-48.0			341.3	584.	62.	16.	1.000076
39500.	215.6	-49.2			335.3	583.	65.	17.	1.000075
40000.	210.6	-50.4			329.4	581.	63.	17.	1.000074
40500.	205.8	-51.6			323.6	580.	61.	18.	1.000072
41000.	201.0	-52.8			317.9	578.	58.	18.	1.000071
41500.	196.3	-54.1			312.2	576.	54.	18.	1.000070
42000.	191.7	-55.3			306.6	575.	50.	18.	1.000068
42500.	187.2	-56.6			301.1	573.	45.	18.	1.000067
43000.	182.8	-57.8			295.7	571.	42.	17.	1.000066
43500.	178.4	-59.0			290.3	570.	38.	17.	1.000065
44000.	174.1	-60.1			284.7	568.	38.	16.	1.000063
44500.	169.9	-61.1			279.2	567.	38.	15.	1.000062
45000.	165.8	-62.2			273.8	566.	44.	14.	1.000061
45500.	161.8	-63.2			268.5	564.	51.	13.	1.000060
46000.	157.8	-64.2			263.2	563.	59.	12.	1.000059
46500.	154.0	-65.3			258.1	561.	67.	12.	1.000057
47000.	150.2	-66.4			253.0	560.	74.	11.	1.000056
47500.	146.4	-67.4			248.0	558.	78.	11.	1.000055
48000.	142.8	-68.5			243.1	557.	83.	11.	1.000054
48500.	139.2	-69.6			238.3	556.	83.	10.	1.000053
49000.	135.7	-70.7			233.5	554.	82.	9.	1.000052
49500.	132.3	-71.8			228.8	553.	81.	8.	1.000051
50000.	128.9	-72.9			224.2	551.	80.	8.	1.000050
50500.	125.6	-74.0			219.7	550.	78.	8.	1.000049
51000.	122.4	-74.9			215.0	548.	87.	8.	1.000048
51500.	119.2	-75.5			210.2	547.	96.	9.	1.000047
52000.	116.1	-76.2			205.4	546.	106.	9.	1.000046
52500.	113.1	-76.9			200.8	545.	118.	9.	1.000045

TABLE C-IV (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 11 AUG 1964, 0001 HRS MST
ASCENSION NO.529.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
53000.	110.1	-77.6			196.3	544.	129.	8.	1.000044
53500.	107.3	-77.6			191.1	545.	139.	8.	1.000043
54000.	104.5	-77.0			185.5	545.	149.	8.	1.000041
54500.	101.8	-76.4			180.2	546.	154.	8.	1.000040
55000.	99.1	-75.8			175.0	547.	153.	7.	1.000039
55500.	96.6	-75.3			170.0	548.	152.	6.	1.000038
56000.	94.1	-74.6			165.1	549.	135.	6.	1.000037
56500.	91.7	-73.9			160.3	550.	115.	5.	1.000036
57000.	89.3	-73.2			155.6	551.	99.	6.	1.000035
57500.	87.0	-72.4			151.1	552.	99.	8.	1.000034
58000.	84.8	-71.7			146.7	553.	98.	11.	1.000033
58500.	82.7	-71.0			142.5	554.	96.	10.	1.000032
59000.	80.6	-70.3			138.4	555.	95.	10.	1.000031
59500.	78.6	-69.6			134.4	556.	96.	10.	1.000030
60000.	76.6	-68.8			130.6	557.	99.	11.	1.000029
60500.	74.7	-68.1			126.9	558.	101.	11.	1.000028
61000.	72.8	-67.4			123.3	558.	99.	11.	1.000027
61500.	71.0	-66.7			119.9	559.	98.	10.	1.000027
62000.	69.3	-66.0			116.5	560.	98.	10.	1.000026
62500.	67.6	-65.3			113.3	561.	99.	10.	1.000025
63000.	65.9	-64.6			110.1	562.	100.	9.	1.000025
63500.	64.3	-63.9			107.1	563.	102.	9.	1.000024
64000.	62.7	-63.2			104.1	564.	103.	9.	1.000023
64500.	61.2	-62.5			101.3	565.	99.	9.	1.000023
65000.	59.7	-61.8			98.5	566.	95.	9.	1.000022
65500.	58.3	-61.2			95.8	567.	89.	12.	1.000021
66000.	56.9	-60.5			93.2	568.	82.	15.	1.000021
66500.	55.5	-59.8			90.7	569.	78.	17.	1.000020
67000.	54.2	-59.1			88.2	570.	77.	20.	1.000020
67500.	52.9	-58.4			85.8	571.	76.	22.	1.000019
68000.	51.6	-57.8			83.5	571.	75.	23.	1.000019
68500.	50.4	-57.3			81.4	572.	74.	25.	1.000018
69000.	49.2	-57.1			79.4	572.	73.	24.	1.000018

TABLE C-IV (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 11 AUG 1964, 0001 HRS MST
ASCENSION NO.529.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
69500.	48.1	-56.9			77.4	573.	73.	23.	1.000017
70000.	46.9	-56.7			75.5	573.	73.	22.	1.000017
70500.	45.8	-56.6			73.7	573.	74.	22.	1.000016
71000.	44.7	-56.4			71.9	573.	75.	22.	1.000016
71500.	43.7	-56.2			70.1	574.	76.	23.	1.000016
72000.	42.7	-56.0			68.4	574.	78.	23.	1.000015
72500.	41.6	-55.8			66.8	574.	79.	23.	1.000015
73000.	40.7	-55.6			65.1	574.	81.	24.	1.000014
73500.	39.7	-55.4			63.6	575.	83.	24.	1.000014
74000.	38.8	-55.2			62.0	575.	85.	25.	1.000014
74500.	37.9	-55.1			60.5	575.	86.	26.	1.000013
75000.	37.0	-54.9			59.0	575.	88.	27.	1.000013
75500.	36.1	-54.7			57.6	576.	92.	27.	1.000013
76000.	35.3	-54.5			56.2	576.	97.	27.	1.000013
76500.	34.5	-54.3			54.9	576.	103.	26.	1.000012
77000.	33.7	-54.1			53.5	576.	106.	27.	1.000012
77500.	32.9	-53.9			52.3	576.	108.	27.	1.000012
78000.	32.1	-53.8			51.0	577.	109.	28.	1.000011
78500.	31.4	-53.6			49.8	577.	112.	27.	1.000011
79000.	30.6	-53.4			48.6	577.	114.	25.	1.000011
79500.	29.9	-53.2			47.4	577.	117.	24.	1.000011
80000.	29.2	-53.0			46.3	578.	113.	24.	1.000010
80500.	28.6	-52.8			45.2	578.	110.	24.	1.000010
81000.	27.9	-52.7			44.1	578.	107.	23.	1.000010
81500.	27.2	-52.5			43.0	578.	106.	24.	1.000010
82000.	26.6	-52.3			42.0	579.	105.	24.	1.000009
82500.	26.0	-52.1			41.0	579.	105.	25.	1.000009
83000.	25.4	-51.6			39.9	580.	105.	26.	1.000009
83500.	24.8	-51.1			38.9	580.	104.	27.	1.000009
84000.	24.2	-50.6			38.0	581.	104.	28.	1.000008
84500.	23.7	-50.1			37.0	581.	103.	27.	1.000008
85000.	23.1	-49.6			36.1	582.	103.	26.	1.000008
85500.	22.6	-49.2			35.2	583.	102.	26.	1.000008

TABLE C-IV (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 11 AUG 1964, 0001 HRS MST
ASCENSION NO.529.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
86000.	22.1	-48.7			34.3	583.	100.	25.	1.000008
86500.	21.6	-48.2			33.5	584.	99.	23.	1.000007
87000.	21.1	-47.7			32.6	585.	97.	22.	1.000007
87500.	20.6	-47.6			31.9	585.	93.	22.	1.000007
88000.	20.2	-47.7			31.2	585.	89.	22.	1.000007
88500.	19.7	-47.7			30.5	585.	84.	22.	1.000007
89000.	19.3	-47.8			29.8	585.	82.	24.	1.000007
89500.	18.8	-47.9			29.1	584.	80.	25.	1.000006
90000.	18.4	-47.9			28.5	584.	77.	27.	1.000006
90500.	18.0	-48.0			27.8	584.	76.	28.	1.000006
91000.	17.6	-48.0			27.2	584.	75.	28.	1.000006
91500.	17.2	-48.1			26.6	584.	73.	29.	1.000006
92000.	16.8	-48.1			26.0	584.	73.	30.	1.000006
92500.	16.4	-48.2			25.4	584.	73.	31.	1.000006
93000.	16.0	-48.2			24.8	584.	74.	31.	1.000006
93500.	15.7	-48.3			24.3	584.	75.	32.	1.000005
94000.	15.3	-48.3			23.7	584.	77.	32.	1.000005
94500.	15.0	-48.4			23.2	584.	79.	32.	1.000005
95000.	14.6	-48.4			22.7	584.	80.	33.	1.000005
95500.	14.3	-48.5			22.2	584.	82.	34.	1.000005
96000.	14.0	-48.5			21.7	584.	83.	36.	1.000005
96500.	13.7	-48.6			21.2	584.	85.	37.	1.000005
97000.	13.3	-48.6			20.7	583.	85.	36.	1.000005
97500.	13.0	-48.7			20.3	583.	85.	35.	1.000005
98000.	12.7	-48.3			19.8	584.	86.	34.	1.000004
98500.	12.5	-47.8			19.3	585.	86.	37.	1.000004
99000.	12.2	-47.3			18.8	585.	87.	40.	1.000004
99500.	11.9	-46.8			18.3	586.	87.	43.	1.000004
100000.	11.6	-46.3			17.9	586.	87.	44.	1.000004
100500.	11.4	-45.8			17.4	587.	86.	44.	1.000004
101000.	11.1	-45.3			17.0	588.	86.	44.	1.000004
101500.	10.9	-44.8			16.6	588.	85.	44.	1.000004
102000.	10.6	-44.3			16.2	589.	84.	46.	1.000004

TABLE C-IV (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 11 AUG 1964, 0001 HRS MST
ASCENSION NO.529.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
102500.	10.4	-43.8			15.8	590.	82.	48.	1.000004
103000.	10.2	-43.4			15.4	590.	81.	50.	1.000003
103500.	9.9	-42.9			15.0	591.	80.	50.	1.000003
104000.	9.7	-42.6			14.7	591.	80.	49.	1.000003
104500.	9.5	-42.3			14.3	592.	79.	48.	1.000003
105000.	9.3	-42.0			14.0	592.	79.	47.	1.000003
105500.	9.1	-41.7			13.7	592.	80.	48.	1.000003
106000.	8.9	-41.4			13.4	593.	81.	48.	1.000003
106500.	8.7	-41.1			13.1	593.	82.	48.	1.000003
107000.	8.5	-40.8			12.7	594.	84.	49.	1.000003
107500.	8.3	-40.5			12.5	594.	86.	49.	1.000003
108000.	8.1	-40.2			12.2	594.	88.	50.	1.000003
108500.	8.0	-39.9			11.9	595.	90.	51.	1.000003
109000.	7.8	-39.6			11.6	595.	92.	51.	1.000003
109500.	7.6	-39.3			11.3	595.	94.	51.	1.000003
110000.	7.4	-39.0			11.1	596.	95.	52.	1.000002
110500.	7.3	-38.7			10.8	596.	97.	52.	1.000002
111000.	7.1	-38.4			10.6	597.	99.	53.	1.000002
111500.	7.0	-38.1			10.3	597.	101.	53.	1.000002
112000.	6.8	-37.9			10.1	597.	103.	53.	1.000002
112500.	6.7	-37.8			9.9	597.	105.	52.	1.000002
113000.	6.5	-37.6			9.7	598.	107.	51.	1.000002
113500.	6.4	-37.4			9.4	598.	110.	50.	1.000002
114000.	6.3	-37.3			9.2	598.	112.	49.	1.000002
114500.	6.1	-37.1			9.0	598.	113.	47.	1.000002
115000.	6.0	-37.0			8.8	598.	115.	46.	1.000002
115500.	5.9	-36.8			8.6	599.	116.	44.	1.000002
116000.	5.7	-36.6			8.4	599.	116.	43.	1.000002
116500.	5.6	-36.5			8.3	599.	114.	43.	1.000002
117000.	5.5	-36.3			8.1	599.	112.	43.	1.000002
117500.	5.4	-36.2			7.9	599.	109.	43.	1.000002
118000.	5.3	-36.0			7.7	600.	107.	44.	1.000002
118500.	5.1	-35.8			7.5	600.	106.	45.	1.000002

TABLE C-IV (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 11 AUG 1964, 0001 HRS MST
ASCENSION NO.529.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
119000.	5.0	-35.7			7.4	600.	104.	47.	1.000002
119500.	4.9	-35.5			7.2	600.	103.	49.	1.000002
120000.	4.8	-35.4			7.1	600.	101.	50.	1.000002
120500.	4.7	-35.2			6.9	601.	99.	51.	1.000002
121000.	4.6	-35.0			6.8	601.	97.	52.	1.000001
121500.	4.5	-34.9			6.6	601.			1.000001
122000.	4.4	-34.7			6.5	601.			1.000001
122500.	4.3	-34.6			6.3	601.			1.000001
123000.	4.2	-34.4			6.2	602.			1.000001
123500.	4.1	-34.3			6.0	602.			1.000001
124000.	4.1	-34.1			5.9	602.			1.000001

TABLE C-V

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 11 AUG 1964, 0330 HRS MST
ASCENSION NO.531.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3989.	876.8	22.4	13.0	55.	1027.0	672.	0.	0.	1.000294
4000.	876.5	22.5	13.1	55.	1026.1	672.	360.	0.	1.000294
5000.	846.8	28.4	16.1	47.	970.5	679.	324.	3.	1.000292
6000.	818.3	27.1	14.3	45.	942.5	677.	289.	5.	1.000278
7000.	790.5	25.1	12.1	44.	917.3	675.	247.	7.	1.000264
8000.	763.5	22.5	10.7	47.	893.9	672.	226.	5.	1.000255
9000.	737.2	19.9	9.3	50.	871.2	669.	109.	4.	1.000246
10000.	711.5	17.3	7.7	53.	848.9	665.	56.	6.	1.000236
11000.	686.5	14.6	6.1	57.	827.0	662.	49.	8.	1.000227
12000.	662.2	11.9	4.4	60.	805.6	659.	45.	8.	1.000218
13000.	638.5	9.2	2.5	63.	784.6	656.	55.	12.	1.000210
14000.	615.3	6.7	-2.2	53.	763.5	652.	71.	13.	1.000195
15000.	592.9	4.5	-6.2	46.	742.1	650.	88.	14.	1.000184
16000.	571.1	2.3	-8.3	45.	720.7	647.	102.	14.	1.000177
17000.	549.9	0.1	-10.5	45.	699.8	644.	110.	13.	1.000170
18000.	529.4	-2.1	-12.6	44.	679.3	642.	115.	11.	1.000163
19000.	509.4	-4.3	-14.8	44.	659.4	639.	112.	9.	1.000157
20000.	490.1	-6.6	-17.0	44.	639.8	636.	104.	8.	1.000151
21000.	471.3	-8.9	-19.2	43.	620.7	633.	95.	6.	1.000146
22000.	453.0	-11.5	-17.9	59.	602.6	630.	88.	4.	1.000143
23000.	435.4	-12.6	-22.8	43.	581.8	629.	70.	3.	1.000135
24000.	418.3	-14.6	-25.7	39.	563.3	626.	51.	3.	1.000130
25000.	401.8	-16.6	-28.7	34.	545.4	624.	53.	4.	1.000125
26000.	385.8	-18.6	-30.5	34.	527.8	621.	77.	3.	1.000120
27000.	370.4	-20.6	-32.2	35.	510.7	619.	113.	4.	1.000116
28000.	355.4	-22.7	-33.9	36.	494.3	616.	137.	6.	1.000112
29000.	340.9	-24.9	-35.7	36.	478.4	614.	135.	8.	1.000108
30000.	326.9	-27.2	-37.5	37.	462.9	611.	127.	9.	1.000105
31000.	313.4	-29.4	-39.4	38.	447.9	608.	121.	8.	1.000101
32000.	300.3	-31.7	-41.2	39.	433.2	605.	111.	8.	1.000098
33000.	287.6	-34.0	-43.2	40.	418.9	602.	106.	9.	1.000094
34000.	275.3	-36.3	-45.1	41.	405.0	599.	100.	9.	1.000091
35000.	263.5	-38.7	-47.1	41.	391.4	596.	93.	10.	1.000088

TABLE C-V (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 11 AUG 1964, 0330 HRS MST
ASCENSION NO.531.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
36000.	252.0	-41.1	-48.9	43.	378.2	593.	86.	11.	1.000085
37000.	240.9	-43.5			365.5	590.	76.	12.	1.000082
38000.	230.2	-46.0			353.1	587.	64.	11.	1.000079
39000.	219.9	-48.5			341.0	584.	44.	10.	1.000076
40000.	209.9	-51.0			329.2	580.	42.	13.	1.000073
41000.	200.3	-53.5			317.8	577.	41.	15.	1.000071
42000.	191.0	-56.1			306.6	574.	46.	17.	1.000068
43000.	182.1	-58.4			295.4	571.	47.	16.	1.000066
44000.	173.5	-60.7			284.4	568.	42.	14.	1.000063
45000.	165.2	-63.0			273.8	564.	43.	13.	1.000061
46000.	157.2	-65.4			263.6	561.	42.	13.	1.000059
47000.	149.5	-67.7			253.5	558.	43.	12.	1.000056
48000.	142.1	-69.5			243.0	556.	56.	12.	1.000054
49000.	135.0	-71.2			232.9	553.	59.	13.	1.000052
50000.	128.2	-73.0			223.2	551.	74.	13.	1.000050
51000.	121.8	-74.7			213.8	548.	86.	13.	1.000048
52000.	115.5	-76.5			204.7	546.	89.	12.	1.000046
53000.	109.6	-75.7			193.4	547.	90.	10.	1.000043
54000.	104.0	-74.1			182.1	549.	82.	9.	1.000041
55000.	98.8	-72.6			171.6	551.	81.	9.	1.000038
56000.	93.8	-72.0			162.5	552.	91.	8.	1.000036
57000.	89.1	-71.3			153.8	553.	117.	9.	1.000034
58000.	84.7	-70.0			145.2	555.	128.	9.	1.000032
59000.	80.5	-67.4			136.3	559.	124.	8.	1.000030
60000.	76.6	-66.0			128.8	560.	109.	6.	1.000029
61000.	72.8	-65.4			122.2	561.	88.	5.	1.000027
62000.	69.3	-64.8			115.9	562.	69.	5.	1.000026
63000.	66.0	-63.9			109.8	563.	65.	6.	1.000024
64000.	62.8	-62.3			103.8	565.	62.	8.	1.000023
65000.	59.8	-60.8			98.1	567.	63.	9.	1.000022
66000.	57.0	-59.2			92.8	570.	78.	11.	1.000021
67000.	54.3	-58.3			88.0	571.	93.	13.	1.000020
68000.	51.7	-58.9			84.1	570.	99.	15.	1.000019

TABLE C-V (Cont)

UPPER AIR DATA

STATION ALTITUDE 3989FEET MSL
DATE 11 AUG 1964, 0330 HRS MST
ASCENSION NO.531.

WHITE SANDS SITE

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
69000.	49.3	-59.1			80.2	570.	101.	17.	1.000018
70000.	47.0	-58.2			76.1	571.	102.	20.	1.000017
71000.	44.8	-57.2			72.3	572.	100.	20.	1.000016
72000.	42.7	-56.6			68.7	573.	101.	23.	1.000015
73000.	40.7	-56.2			65.4	573.	102.	23.	1.000015
74000.	38.8	-55.8			62.2	574.	100.	21.	1.000014
75000.	37.0	-55.4			59.2	575.	98.	19.	1.000013
76000.	35.3	-55.0			56.4	575.			1.000013
77000.	33.7	-54.6			53.7	576.			1.000012
78000.	32.1	-54.2			51.1	576.			1.000011

APPENDIX D

IMPACT PREDICTION DATA

AEROBEE NASA 4.82 GG

TABLE		PAGE
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APPENDIX D

TABLE D-I

IMPACT PREDICTION DATA

TIME: 0330 HOURS MST
MISSILE: AEROBEE NASA 4.82 GG DATE: 11 August 1964

RELEASE TIME (MST)		DISPLACEMENT OF IMPACT DUE TO WIND IN MILES				THEORETICAL IMPACT IN MILES	
RAWIN-SONDE	PIBAL	143 TO 2,000 FT	2,000 TO 20,000 FT	20,000 TO 100,000 FT	TOTAL	N-S OF LAUNCHER	E-W OF LAUNCHER
R_1 2130		10.0W	1.0W	6.3E	4.7W		
R 2130	P 2353	19.0S	12.0S	0.4N	30.6S	18.9N	13.3W
R_1 2130		6.9W	1.4E	6.3E	0.8E		
R 2130	P 0009	4.6S	5.2S	0.4N	9.4S	40.1N	7.8W
R_1 2130		4.4W	0.9E	6.3E	2.8E		
R 2130	P 0029	0.1N	5.6S	0.4N	5.1S	44.4N	5.8W
R_1 0001		3.3W	4.1E	6.3E	7.1E		
R 2130	P 0058	2.0N	2.8S	0.4N	0.4S	49.1N	1.5W
R_1 0001		6.5W	3.4E	6.3E	3.2E		
R 2130	P 0130	3.0N	1.7S	0.4N	1.7N	51.2N	5.4W
R_1 0001		4.6W	4.3E	6.3E	6.0E		
R 2130	P 0159	0.7S	2.7S	0.4N	3.0S	46.5N	2.6W
R_1 0001		7.5W	4.1E	5.8E	2.4E		
R 0001	P 0230	0.9S	2.1S	0.4N	2.6S	46.9N	6.2W
R_2 0215		3.0W	3.3E	5.8E	6.1E		
R 0001	P 0245	5.9N	1.7N	0.4N	8.0N	57.5N	2.5W
R_2 0215		1.1W	3.3E	5.8E	8.0E		
R 0001	P 0300	4.2N	1.7N	0.4N	6.3N	55.8N	0.6W
R_2 0215		0.8W	3.3E	5.8E	8.3E		
R 0001	P 0310	6.1N	1.7N	0.4N	8.2N	57.7N	0.3W
R_2 0215		0.7W	3.3E	5.8E	8.4E		
R 0001	P 0320	6.9N	1.7N	0.4N	9.0N	58.5N	0.2W
* R_1 0330		0.2W	5.6E	5.7E	11.1E		
* R 0330	*P 0332	3.9N	1.0N	0.4N	5.3N	54.8N	2.5E

P = Double Theodolite Winds (143-4,000 Ft)
P_1 = Single Theodolite Winds (2,000-10,000 Ft) N/A
R = Rawinsonde Winds (Above 20,000 Ft)
R_1 = Rawinsonde Winds (4,000-20,000 Ft)
R_2 = Rawin Winds (4,000-20,000 Ft)
* Post-Shoot Data

APPENDIX D

TABLE D-I (Cont)

IMPACT PREDICTION DATA

AEROBEE NASA 4.82 GG

JACK SETTINGS

West leg 24 inches East leg 26 inches

LAUNCHER SETTING

Tilt 2.76 degrees Azimuth 356.0 degrees

COMPONENTS OF TILT

2.76 degrees north 0.19 degrees West

NO WIND IMPACT

49.5 miles north of Navy Blockhouse 8.6 miles West of Navy Blockhouse

PREDICTED IMPACT

58 miles north of Navy Blockhouse 0 miles E-W of Navy Blockhouse

PREDICTED BOOSTER IMPACT

Azimuth 358 Degrees Distance 1,120 feet

Recommendation Fire

With 98 % confidence of impacting on range, based upon:

wind correction 12 miles

one hour wind variability 11 miles

Date/Time 11 August 1964, 0314 Hours MST

Actual Impact (From Launcher) *SOTIM 55.4 Miles North, 5.9 Miles West

Actual Booster Impact (From Launcher) N/A

*Sonic Observation of Trajectory and Impact of Missiles

U. S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT ACTIVITY
WHITE SANDS MISSILE RANGE
NEW MEXICO

JOSEPH MILLER
LT COLONEL, SIGNAL CORPS
COMMANDING

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HEADQUARTERS
U. S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT ACTIVITY
WHITE SANDS MISSILE RANGE
NEW MEXICO

August 1964

1. Data Report ERDA-182 has been prepared under the supervision of the Meteorological Support Division and is published for the information and guidance of all concerned.

2. Suggestions or criticisms relative to the form, contents, purpose, or use of this publication should be referred to the Commanding Officer, U. S. Army Electronics Research and Development Activity, ATTN: SELWS-M, White Sands Missile Range, New Mexico.

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